3)

- $\|\vec{V}_3\| = rI \rightarrow 1{,}035cm$ d'où $\|\vec{V}_3\| = 2\,V$ et r = $\dfrac{\|\vec{V}_3\|}{I} = 21{,}5\ \Omega$.
- $Z_{BC} = \dfrac{U_{BC}}{I} = \dfrac{U_2}{I} = \sqrt{r^2 + (\dfrac{1}{C\omega} - L\omega)^2} \Leftrightarrow \dfrac{U_2^2}{I^2} = r^2 + (\dfrac{1}{C\omega} - L\omega)^2$

$\Leftrightarrow \dfrac{1}{C\omega} - L\omega = \sqrt{\left(\dfrac{U_2}{I}\right)^2 - r^2} \Leftrightarrow L\omega = \dfrac{1}{C\omega} - \sqrt{\left(\dfrac{U_2}{I}\right)^2 - r^2}$

$\Leftrightarrow L = \dfrac{1}{C\omega^2} - \dfrac{\sqrt{\left(\dfrac{U_2}{I}\right)^2 - r^2}}{\omega} = \dfrac{1}{5.10^{-6}1221^2} - \dfrac{\sqrt{\left(\dfrac{4{,}58}{0{,}096}\right)^2 - 21{,}5^2}}{1221} \Leftrightarrow$

L = 0,0993 H ≈ 0,1 H

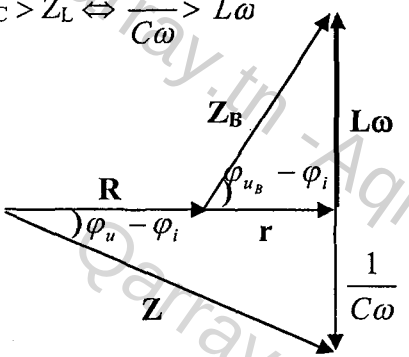
EXERCICE 3 :

1)

a)

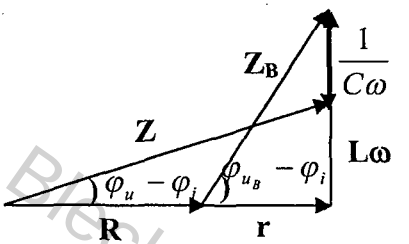
Circuit capacitif :

$Z_C > Z_L \Leftrightarrow \dfrac{1}{C\omega} > L\omega$



Circuit inductif :

$Z_C < Z_L \Leftrightarrow \dfrac{1}{C\omega} < L\omega$

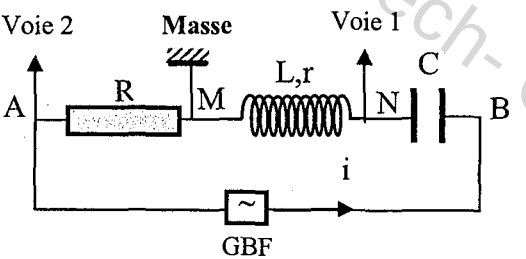


b) $Cos\,(\varphi_{u_B} - \varphi_i) = \dfrac{r}{\sqrt{r^2 + (L\omega)^2}} = \dfrac{r}{\sqrt{r^2 + (2\pi NL)^2}}$

$Sin\,(\varphi_{u_B} - \varphi_i) = \dfrac{L\omega}{\sqrt{r^2 + (L\omega)^2}} = \dfrac{2\pi NL}{\sqrt{r^2 + (2\pi NL)^2}}$

2)

a)



Qarray.tn -Aqra Blech- Qarray.tn